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First Named Inventor	Phui Qui Nguyen
Group Art Unit	1762
Examiner Name	E. Tsoy
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Firm or Individual name	Hilmar Fricke, Registration No. 22,384
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Date	September 27, 2006

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

NGUYEN ET AL.

CASE NO: FA1216 US NA

SERIAL NO: 10/722,796

GROUP ART UNIT: 1762

FILED: NOVEMBER 25, 2003

EXAMINER: E. TSOY

FOR: PROCESS FOR MULTILAYER COATING OF SUBSTRATES

REPLY BRIEF

Mail Stop Appeal Brief Patents
Commissioner for Patents
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Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 41.41, the following is a Reply Brief filed, in triplicate, in response to the Examiner's Answer mailed on July 27, 2006.

TABLE OF CONTENTS

I. STATUS OF CLAIMS

Claims 1-6 and 8-9 stand rejected and are the subject of this Appeal. Originally-filed Claims 7 and 10 have been canceled.

II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether Claims 1, 3, and 5-6 are anticipated by Mizutani *et al.* (U.S. Patent No. 5,780,530) as evidenced by Wu *et al.* (U.S. Patent No. 6,039,872).

Whether Claims 1-6 and 9 are obvious under 35 U.S.C. § 103(a) in view of Mizutani *et al.* in further view of Wu *et al.*

Whether Claims 1-6 and 8-9 are obvious under 35 U.S.C. § 103(a) in view of Gaglani (U.S. Patent No. 5,312,943) in further view of Murase (U.S. Patent No. 4,246,368) in further view of Wu *et al.* in further view of Bergstrom *et al.* (U.S. Patent No. 6,384,125).

Whether Claims 1-6 and 8-9 are obvious under 35 U.S.C. § 103(a) in view of Maag *et al.* (U.S. Patent No. 6,333,077) in view of Gaglani in further view of Wu *et al.* in further view of Bergstrom *et al.*

III. ARGUMENT

A. RADICAL POLYMERIZATION IS NOT AN ACCEPTABLE CURING MECHANISM FOR MIZUTANI ET AL.

In Mizutani *et al.*, unsaturated groups are only introduced and used to chemically combine different polyols. C=C groups are disclosed only in connection with the silicon polyols and not for the other polyols. In other words, the unsaturated groups, if present in the silicon polyol at all, are reacted to prepare the final polyol binder and are *not* available for radical polymerization as a curing mechanism after application of the coating (*see* col. 6, lines 27-32). This result is further evidenced by Production Example 7 of Mizutani *et al.*, where a modified silicon polyol is prepared by incorporating C=C via maleic anhydride followed by polymerization with unsaturated monomers.

Wu *et al.*, whether used as evidence of Mizutani *et al.*'s disclosure or in combination with Mizutani *et al.*, cannot provide the necessary disclosure to support the Examiner's novelty or obviousness arguments. Proposed modifications to a

reference that "would render the prior art invention being modified unsatisfactory for its intended purpose, [provide] no suggestion or motivation to make the proposed modification." MPEP § 2143.01(V) (citing *In re Gordon*, 733 F.2d 200 (Fed. Cir. 1984)). As evidenced by Mizutani *et al.* itself, curing of the binder system does not occur by thermally-initiated radical polymerization, nor is it feasible. The presence of double bonds therein is only for the modification of silicone polyols prior to application/curing. The modification thus proposed by the Examiner in connection with Wu *et al.* produces an unsatisfactory result for Mizutani *et al.*, namely uncured coatings because of an infeasible curing mechanism.

B. SILANOL GROUPS ARE NOT EQUIVALENT TO HYDROXYL GROUPS

The Examiner's analysis of the nature of silanol and hydroxyl groups is flawed. The Examiner presumed that Applicants should have claimed that OH groups are linked to the backbone of the binder and not to a silicon atom. *See* Examiner's Answer, at pg. 16, 3rd ¶. When Applicants stated that these OH groups are non-reactive hydroxyl groups that are linked, for example, to the backbone of the binder, Applicants merely were explaining the difference between silanol and hydroxyl groups and were not arguing limitations that were not in the claims. On page 8, lines 12-17, of Applicants' specification, Applicants disclose that the hydroxyl groups can be introduced by reacting NCO groups still present in the binders with polyols, clearly showing that alcoholic hydroxy groups are introduced and not silanol groups. It is also explained that the *additionally* present hydroxyl groups have a catalytic action on moisture curing and can also react with the alkoxysilane groups under condensation, clearly indicating that separate hydroxyl groups must be present.

Citation of three patent applications (U.S. Patent Publication Nos. 2002/0174929, 2002/0140288, and 2004/0044114), all by owned by The Goodyear Tire & Rubber Co. ("Goodyear") and each defining the term silica as "having hydroxyl groups, e.g., silanol groups", is hardly the art recognition needed to demonstrate that those of ordinary skill equate hydroxyl groups to silanol groups. Terms in a patent application can be given any meaning so long as the "special meaning assigned to a term '[is] sufficiently clear in the specification that any departure from common usage

would be so understood by a person of experience in the field of the invention.'" MPEP § 2111.01 (quoting *Multiform Desiccants Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998)). Applicants respectfully submit that defining silica as having hydroxyl groups is simply Goodyear's way of expressing a special meaning to the term silica. In no way, however, does such a definition fulfill the evidentiary burden needed to rebut Applicants' evidence, which includes peer-reviewed journal articles where such freedom with term definitions is subject to much higher scrutiny, and demonstrates the differences between a silanol group and a hydroxyl group.

Further, the phrase "silanol hydroxy group" in U.S. Patent Nos. 6,156,578, 4,093,600, 4,458,066, and 5,378,787 does not conflict with the general teaching in the art. It is clear in these references that hydrolyzable groups are meant and not hydroxyl groups.

Gaglani does not bolster the Examiner's *prima facie* case. The Examiner stated that

> some amount of hydroxyl groups would be present in the resin oligomer [of Gaglani] since alkoxy groups bonded to silicon atoms would hydrolyze to *hydroxyl* groups bonded to silicon atoms (so called 'silanol' groups). Therefore, the presence of hydroxyl groups in the resin oligomer [of Gaglani] would obvious even without applying teaching of Bergstrom *et al.*

Examiner's Answer, at pg. 17, 1st ¶ (emphasis in original). This statement is also based on the wrong view of silanol groups. Furthermore, even if intermediate reaction stage alkoxy silane groups would be present parallel to not finally reacted silanol groups in the binder of Gaglani (what is only an assertion of the Examiner), the actual initial binder to be used in the coating composition of Gaglani *does not* contain parallel alkoxy silane groups *and* silanol groups.

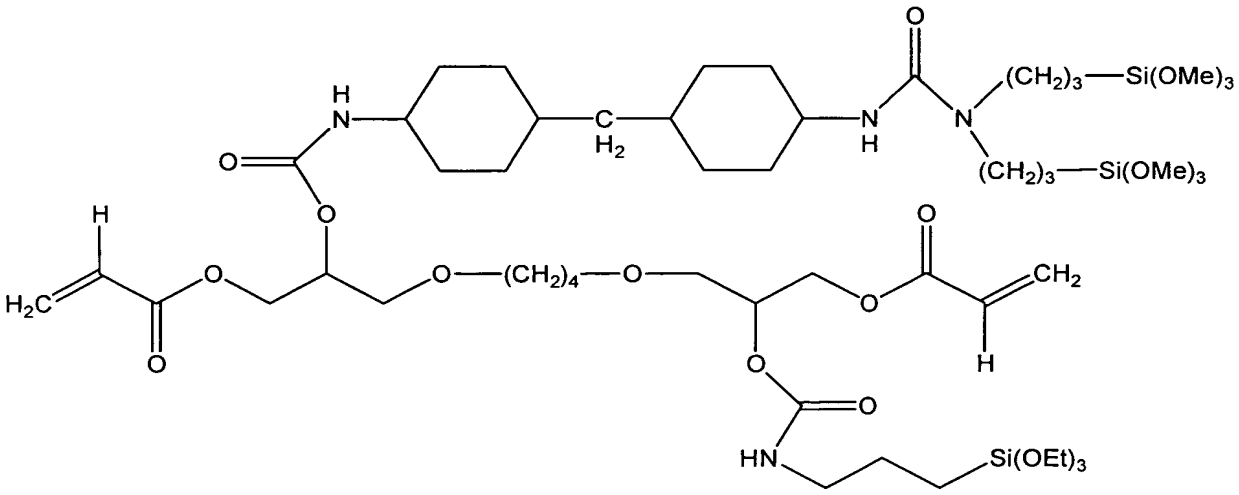
C. THE PREAMBLE OF CLAIM 1 IS SIGNIFICANT TO THE INTERPRETATION OF THE CLAIM

The preamble of claim 1 sets forth a positive limitation that is necessary for the claim's definiteness. In the absence of the preamble, the beginning of claim 1 would read "[a] process . . . which comprises the steps of applying at least two coating layers and curing of the applied coatings . . . ." Without the phrase "for multi-layer coating of vehicles and vehicle parts", there is no indication in the claim as to

what the at least two coating layers are applied and whether the at least two layers are multilayers or separate coatings. Because the phrase "for multi-layer coating of vehicles and vehicle parts" necessarily supplies such information, the phrase is not merely an intended use of the invention, but rather is required to fully and intrinsically set forth the invention.

D. THE EXAMINER'S CALCULATIONS ARE INACCURATE

In relation to the calculations on page 10 of the Examiner's Answer, Applicants note that these calculations are inaccurate. The mentioned sum formula $C_{41}N_4Si_3O_{18}H_{98}$ (formula 1a of Gaglani) has a molecular weight of 1018 (not 1158), resulting in a silicon content of 8.2% and C=C equivalent weight of 509. Further, the sum formula itself is incorrect; it should be $C_{53}N_4Si_3O_{20}H_{100}$, which has a molecular weight of 1196. The structure of Gaglani's formula 1a is reproduced below:



Applicants note that formula 1a does not contain hydroxyl groups. The resin of claim 1, however, requires hydroxyl groups ("wherein the resin has free-radically polymerizable olefinic double bonds, hydrolysable alkoxysilane groups, and hydroxyl groups"). Without such a disclosure in the cited references, the *prima facie* case of obviousness must fail.

At page 13, first paragraph, the Examiner misinterpreted Mizutani *et al.*'s alkoxysilyl equivalent weights. As stated in Mizutani *et al.*, "[t]he proportion of the alkoxysilane monomer is such that the resulting copolymer has an alkoxysilyl equivalent weight *greater than* 650, preferably *greater than* 900, and most preferably

about 1500" (col. 4, lines 3-6; emphasis added). The terms "greater than 650" and "greater than 900" necessarily mean that alkoxysilyl equivalent weight can be any value more than 650 or 900, including more than 1500.[1] The term "most preferably about 1500" only sets forth a preferred alkoxysilyl equivalent weight and in no way limits the equivalent weight to a less than or equal to 1500. Thus, the Examiner's analysis at page 13, first paragraph, is invalid.

Further, the presumptions regarding the same equivalent weight ranges of C=C and alkoxysilane groups was not proven by the Examiner. For example, assuming an alkoxysilyl equivalent weight of 1500, 1500 g relate to one alkoxysilane group, which thus has a 1.8% silicon content. At column 6, lines 33-35, of Mizutani *et al.*, it is disclosed that the silicon polyol and the other polyol resin are combined in weight proportions of 3-70 parts silicon polyol and 97-30 parts other polyol resin. Such a combination results in a maximum of 1.26% silicon based on total amount of polyols. Further, Mizutani *et al.* require curing agents, which are used in a weight ratio of about 2:1 to 3:1 polyols to curing agent according to the examples therein. Considering the total resin solids of polyols plus curing agents, the silicon content must be below 1%, which is outside of Applicants' 1-10% claimed silicon content range, based on total resin solids content.

IV. SUMMARY

In regards to the remainder of the Examiner's assertions in the Examiner's Answer, Applicants incorporate by reference the Appeal Brief in its entirety.

For the reasons set forth above and in the Appeal Brief, the Board of Patent Appeals and Interferences is respectfully requested to reverse the final rejection of pending claims 1-6 and 8-9 and indicate allowability of claims.

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[1] Because the term is "greater than 600", in theory, the equivalent weight value has no limit; that is, it is infinite.

Respectfully submitted,

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Dated: September 27, 2006

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Dated: September 27, 2006

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on September 27, 2006 .
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Application No: 10/722,796
Filing Date: November 25, 2003
First Named Inventor: Phui Qui Nguyen
Title: Process for Multilayer Coating of Substrates
Attorney Docket: FA1216 US NA

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